

1

SEQUENCE LISTING

<110> The Government of the United States of America...

<120> Synthetic Peptides Immunoreactive With Hepatitis A  
Virus Antibodies

<130> 03063\_0461WP

<140>

<141>

<150> 60/144,412

<151> 1999-07-15

<160> 94

<170> PatentIn Ver. 2.0

<210> 1

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

WO 01/05824

PCT/US00/19267

2

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 1

Gly Leu Asp His Ile Leu Ser Leu Ala Asp Ile Glu Glu Glu Gln Met

1

5

10

15

Ile Gln Ser Val Gln

20

&lt;210&gt; 2

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 2

Asp Arg Thr Ala Val Thr Gly Ala Ser Tyr Phe Thr Ser Val Asp Gln

1

5

10

15

Ser Ser Val His Gln

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PCT/US00/19267

3

20

&lt;210&gt; 3

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 3

Glu Val Gly Ser His Gln Val Glu Pro Leu Arg Thr Ser Val Asp Lys

1

5

10

15

Pro Gly Ser Lys Gln

20

&lt;210&gt; 4

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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PCT/US00/19267

4

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 4

Glu Pro Leu Arg Thr Ser Val Asp Lys Pro Gly Ser Lys Lys Thr Gln

1

5

10

15

Gly Glu Lys Phe Gln

20

&lt;210&gt; 5

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 5

Asp Lys Pro Gly Ser Lys Lys Thr Gln Gly Glu Lys Phe Phe Leu Ile

1

5

10

15

WO 01/05824

PCT/US00/19267

5

His Ser Ala Asp Gln

20

&lt;210&gt; 6

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 6

Leu Tyr Asn Glu Gln Phe Ala Val Gln Gly Leu Leu Arg Tyr His Thr

1

5

10

15

Tyr Ala Arg Phe Gln

20

&lt;210&gt; 7

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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PCT/US00/19267

6

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV\_\_\_\_

VP2 and VP4 Peptides

&lt;400&gt; 7

His Thr Tyr Ala Arg Phe Gly Ile Glu Ile Gln Val Gln Ile Asn Pro

1 5 10 15

Thr Pro Phe Gln

20

&lt;210&gt; 8

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 8

Ile Asn Pro Thr Pro Phe Gln Gln Gly Gly Leu Ile Cys Ala Met Val

1 5 10 15

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PCT/US00/19267

7

Pro Gly Asp Gln

20

&lt;210&gt; 9

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 9

His Phe Lys Asp Pro Gln Tyr Pro Val Trp Glu Leu Thr Ile Arg Val

1

5

10

15

Trp Ser Glu Leu Gln

20

&lt;210&gt; 10

&lt;211&gt; 21

&lt;212&gt; PRT

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PCT/US00/19267

8

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP2 and VP4 Peptides

&lt;400&gt; 10

Asn Ile Gly Thr Gly Thr Ser Ala Tyr Thr Ser Leu Asn Val Leu Ala

1

5

10

15

Arg Phe Thr Asp Gln

20

&lt;210&gt; 11

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 11

Ser Asp Pro Ser Gln Gly Gly Gly Ile Lys Ile Thr His Phe Thr Thr



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9

1

5

10

15

Trp Thr Ser Ile Gln

20

&lt;210&gt; 12

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 12

Gly Gly Ile Lys Ile Thr His Phe Thr Thr Trp Thr Ser Ile Pro Thr

1

5

10

15

Leu Ala Ala Gln

20

&lt;210&gt; 13

&lt;211&gt; 21

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PCT/US00/19267

10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 13

Gln Phe Pro Phe Asn Ala Ser Asp Ser Val Gly Gln Gln Ile Lys Val

1

5

10

15

Ile Pro Val Asp Gln

20

&lt;210&gt; 14

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 14

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11

Phe Asn Ala Ser Asp Ser Val Gly Gln Gln Ile Lys Val Ile Pro Val

1

5

10

15

Asp Pro Tyr Phe Gln

20

&lt;210&gt; 15

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV \_

VP3 Peptide

&lt;400&gt; 15

Ser Asp Ser Val Gly Gln Gln Ile Lys Val Ile Pro Val Asp Pro Tyr

1

5

10

15

Phe Phe Gln Met Gln

20

&lt;210&gt; 16

WO 01/05824

PCT/US00/19267

12

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 16

Ile Lys Val Ile Pro Val Asp Pro Tyr Phe Phe Gln Met Thr Asn Thr

1

5

10

15

Asn Pro Asp Gln

20

&lt;210&gt; 17

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

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PCT/US00/19267

13

&lt;400&gt; 17

Lys Cys Ile Thr Ala Leu Ala Ser Ile Cys Gln Met Phe Cys Phe Trp

1

5

10

\_\_\_15

Arg Gly Asp Leu Gln

20

&lt;210&gt; 18

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 18

Phe Trp Arg Gly Asp Leu Val Phe Asp Phe Gln Val Phe Pro Thr Lys

1

5

10

15

Tyr His Ser Gly Gln

20

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PCT/US00/19267

14

&lt;210&gt; 19

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 19

Phe Asp Phe Gln Val Phe Pro Thr Lys Tyr His Ser Gly Arg Leu Leu

1

5

10

15

Phe Cys Phe Val Gln

20

&lt;210&gt; 20

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

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15

&lt;400&gt; 20

Phe Pro Thr Lys Tyr His Ser Gly Arg Leu Leu Phe Cys Phe Val Pro

1

5

10

15

Gly Asn Glu Leu Gln

20

&lt;210&gt; 21

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 21

Gly Ile Thr Leu Lys Gln Ala Thr Thr Ala Pro Cys Ala Val Met Asp

1

5

10

15

Ile Thr Gly Val Gln

20

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PCT/US00/19267

16

&lt;210&gt; 22

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP3 Peptide

&lt;400&gt; 22

Val Ala Ser His Val Arg Val Asn Val Tyr Leu Ser Ala Ile Asn Leu

1

5

10

15

Glu Cys Phe Ala Gln

20

&lt;210&gt; 23

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV



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17

## VP1 Peptide

&lt;400&gt; 23

Thr Thr Val Ser Thr Glu Gln Asn Val Pro Asp Pro Gln Val Gly Ile

1

5

10

15

Thr Thr Met Lys Gln

20

&lt;210&gt; 24

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

## VP1 Peptide

&lt;400&gt; 24

Gln Asn Val Pro Asp Pro Gln Val Gly Ile Thr Thr Met Lys Asp Leu

1

5

10

15

Lys Gly Lys Ala Gln

20

WO 01/05824

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18

&lt;210&gt; 25

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 25

Asn Arg Gly Lys Met Asp Val Ser Gly Val Gln Ala Pro Val Gly Ala

1 5 10 15

Ile Thr Thr Ile Gln

20

&lt;210&gt; 26

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

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19

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 26

Ile Thr Thr Ile Glu Asp Pro Val Leu Ala Lys Lys Val Pro Glu Thr

1

5

10

15

Phe Pro Glu Leu Gln

20

&lt;210&gt; 27

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 27

Glu Asp Pro Val Leu Ala Lys Lys Val Pro Glu Thr Phe Pro Glu Leu

1

5

10

15

Lys Pro Gly Glu Gln

WO 01/05824

PCT/US00/19267

20

20

&lt;210&gt; 28

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 28

Ala Lys Lys Val Pro Glu Thr Phe Pro Glu Leu Lys Pro Gly Glu Ser

1

5

10

15

Arg His Thr Ser Gln

20

&lt;210&gt; 29

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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21

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 29

Phe Pro Glu Leu Lys Pro Gly Glu Ser Arg His Thr Ser Asp His Met

1

5

10

15

Ser Ile Tyr Lys Gln

20

&lt;210&gt; 30

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 30

Asp His Met Ser Ile Tyr Lys Phe Met Gly Arg Ser His Phe Leu Cys

1

5

10

15

WO 01/05824

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22

Thr Phe Thr Phe Gln

20

&lt;210&gt; 31

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 31

His Phe Leu Cys Thr Phe Thr Phe Asn Ser Asn Asn Lys Glu Tyr Thr

1

5

10

15

Phe Pro Ile Thr Gln

20

&lt;210&gt; 32

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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23

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 32

Thr Pro Val Gly Leu Ala Val Asp Thr Pro Trp Val Glu Lys Glu Ser

1

5

10

15

Ala Leu Ser Ile Gln

20

&lt;210&gt; 33

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 33

Leu Ser Phe Ser Cys Tyr Leu Ser Val Thr Glu Gln Ser Glu Phe Tyr

1

5

10

15

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24

Phe Pro Arg Ala Gln

20

&lt;210&gt; 34

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 34

Ser Val Thr Glu Gln Ser Glu Phe Tyr Phe Pro Arg Ala Pro Leu Asn

1

5

10

15

Ser Asn Ala Met Gln

20

&lt;210&gt; 35

&lt;211&gt; 21

&lt;212&gt; PRT



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25

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 35

Pro Leu Asn Ser Asn Ala Met Leu Ser Thr Glu Ser Met Met Ser Arg

1

5

10

15

Ile Ala Ala Gly Gln

20

&lt;210&gt; 36

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 36

Met Ser Arg Ile Ala Ala Gly Asp Leu Glu Ser Ser Val Asp Asp Pro

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26

1

5

10

15

Arg Ser Glu Glu Gln

20

&lt;210&gt; 37

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 37

Ala Gly Asp Leu Glu Ser Ser Val Asp Asp Pro Arg Ser Glu Glu Asp

1

5

10

15

Lys Arg Phe Glu Gln

20

&lt;210&gt; 38

&lt;211&gt; 21

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27

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

VP1 Peptide

&lt;400&gt; 38

Val Asp Asp Pro Arg Ser Glu Glu Asp Lys Arg Phe Glu Ser His Ile

1

5

10

15

Glu Cys Arg Lys Gln

20

&lt;210&gt; 39

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 39

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28

Ser His Ile Glu Cys Arg Lys Pro Tyr Lys Glu Leu Arg L u Glu Val

1

5

10

15

Gly Lys Gln Arg Gln

20

&lt;210&gt; 40

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 40

Pro Tyr Lys Glu Leu Arg Leu Glu Val Gly Lys Gln Arg Leu Lys Tyr

1

5

10

15

Ala Gln Glu Glu Gln

20

&lt;210&gt; 41

WO 01/05824

PCT/US00/19267

29

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 41

Gln Arg Leu Lys Tyr Ala Gln Glu Glu Leu Ser Asn Glu Val Leu Pro

1

5

10

15

Pro Pro Arg Lys Gln

20

&lt;210&gt; 42

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

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30

&lt;400&gt; 42

Val Leu Pro Pro Pro Arg Lys Met Lys Gly Leu Phe Ser Gln Ala Lys

1

5

10

15

Ile Ser Leu Phe Gln

20

&lt;210&gt; 43

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 43

Phe Ser Gln Ala Lys Ile Ser Leu Phe Tyr Thr Glu Glu His Glu Ile

1

5

10

15

Met Lys Phe Ser Gln

20

WO 01/05824

PCT/US00/19267

31

&lt;210&gt; 44

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 44

Lys Val Asn Phe Pro His Gly Met Leu Asp Leu Glu Glu Ile Ala Ala

1

5

10

15

Asn Ser Lys Asp Gln

20

&lt;210&gt; 45

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

WO 01/05824

PCT/US00/19267

32

&lt;400&gt; 45

Asp Leu Glu Glu Ile Ala Ala Asn Ser Lys Asp Phe Pro Asn Met Ser

1

5

10

15

Glu Thr Asp Leu Gln

20

&lt;210&gt; 46

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 46

Lys Ile Asn Leu Ala Asp Arg Met Leu Gly Leu Ser Gly Val Gln Glu

1

5

10

15

Ile Lys Glu Gln

20



WO 01/05824

PCT/US00/19267

33

&lt;210&gt; 47

&lt;211&gt; 26

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2A Peptide

&lt;400&gt; 47

Gln Arg Leu Lys Tyr Ala Gln Glu Glu Leu Ser Asn Glu Val Leu Pro

1

5

10

15

Pro Pro Arg Lys Met Lys Gly Leu Phe Gln

20

25

&lt;210&gt; 48

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

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34

## P2A Peptide

&lt;400&gt; 48

Trp Leu Asn Pro Lys Lys Ile Asn Leu Ala Asp Arg Met Leu Gly Leu

1

5

10

15

Ser Gly Val Gln Glu Ile Lys Glu Gln

20

25

&lt;210&gt; 49

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

## P2B Peptide

&lt;400&gt; 49

Val Ile Gln Gln Leu Asn Gln Asp Glu His Ser His Ile Ile Gly Leu

1

5

10

15

Leu Arg Val Met Gln

20

WO 01/05824

PCT/US00/19267

35

&lt;210&gt; 50

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 50

Asn Ile Leu Lys Asp Asn Gln Gln Lys Ile Glu Lys Ala Ile Glu Glu

1	5	10	15
---	---	----	----

Ala Asp Glu Phe Gln

20

&lt;210&gt; 51

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

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PCT/US00/19267

36

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 51

Leu Gly Ser Ile Asn Gln Ala Met Val Thr Arg Cys Glu Pro Val Val

1

5

10

15

Cys Tyr Leu Tyr Gln

20

&lt;210&gt; 52

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 52

Arg Cys Glu Pro Val Val Cys Tyr Leu Tyr Gly Lys Arg Gly Gly Gly

1

5

10

15

Lys Ser Leu Thr Gln

WO 01/05824

PCT/US00/19267

37

20

&lt;210&gt; 53

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 53

Thr Lys Pro Val Ala Ser Asp Tyr Trp Asp Gly Tyr Ser Gly Gln Leu

1

5

10

15

Val Cys Ile Ile Gln

20

&lt;210&gt; 54

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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PCT/US00/19267

38

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 54

Val Ser Gly Cys Pro Met Arg Leu Asn Met Ala Ser Leu Glu Glu Lys

1

5

10

15

Gly Arg His Phe Gln

20

&lt;210&gt; 55

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 55

Leu Asn Met Ala Ser Leu Glu Glu Lys Gly Arg His Phe Ser Ser Pro

1

5

10

15

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39

Phe Ile Ile Ala Gln

20

&lt;210&gt; 56

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 56

Asn Pro Ser Pro Lys Thr Val Tyr Val Lys Glu Ala Ile Asp Arg Arg

1

5

10

15

Leu His Phe Lys Gln

20

&lt;210&gt; 57

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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40

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 57

Val Lys Glu Ala Ile Asp Arg Arg Leu His Phe Lys Val Glu Val Lys

1

5

10

15

Pro Ala Ser Phe Gln

20

&lt;210&gt; 58

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 58

Val Lys Pro Ala Ser Phe Phe Lys Asn Pro His Asn Asp Met Leu Asn

1

5

10

15



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41

Val Asn Leu Ala Gln

20

&lt;210&gt; 59

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 59

Lys Asn Pro His Asn Asp Met Leu Asn Val Asn Leu Ala Lys Thr Asn

1

5

10

15

Asp Ala Ile Lys Gln

20

&lt;210&gt; 60

&lt;211&gt; 21

&lt;212&gt; PRT

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42

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 60

Leu Ala Lys Thr Asn Asp Ala Ile Lys Asp Met Ser Cys Val Asp Leu

1

5

10

15

Ile Met Asp Gly Gln

20

&lt;210&gt; 61

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P2C Peptide

&lt;400&gt; 61

Val Met Thr Val Glu Ile Arg Lys Gln Asn Met Thr Glu Phe Met Glu

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43

1

5

10

15

Leu Trp Ser Gln

20

&lt;210&gt; 62

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3A Peptide

&lt;400&gt; 62

Ser Gln Gly Ile Ser Asp Asp Asp Asn Asp Ser Ala Val Ala Glu Phe

1

5

10

15

Phe Gln Ser Phe Gln

20

&lt;210&gt; 63

&lt;211&gt; 21

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44

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3A Peptide

&lt;400&gt; 63

Asp Ser Ala Val Ala Glu Phe Phe Gln Ser Phe Pro Ser Gly Glu Pro

1

5

10

15

Ser Asn Ser Lys Gln

20

&lt;210&gt; 64

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3A Peptide

&lt;400&gt; 64

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45

Phe Gln Ser Phe Pro Ser Gly Glu Pro Ser Asn Ser Lys Leu Ser Gly

1

5

10

15

Phe Phe Gln Ser Gln

20

&lt;210&gt; 65

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3A Peptide

&lt;400&gt; 65

Ser Ala Val Ala Glu Phe Phe Gln Ser Phe Pro Ser Gly Glu Pro Ser

1

5

10

15

Asn Ser Lys Leu Ser Gly Phe Phe Gln

20

25

&lt;210&gt; 66

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46

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3B Peptide

&lt;400&gt; 66

His Gly Val Thr Lys Pro Lys Gln Val Ile Lys Leu Asp Ala Asp Pro

1

5

10

15

Val Glu Ser Gln

20

&lt;210&gt; 67

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3C Peptide

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47

&lt;400&gt; 67

Gly Leu Val Arg Lys Asn Leu Val Gln Phe Gly Val Gly Glu Lys Asn

1

5

10

15

Gly Cys Val Arg Gln

20

&lt;210&gt; 68

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3C Peptide

&lt;400&gt; 68

Asp Val Val Leu Met Lys Val Pro Thr Ile Pro Lys Phe Arg Asp Ile

1

5

10

15

Thr Gln His Phe Gln

20

WO 01/05824

PCT/US00/19267

48

&lt;210&gt; 69

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3C Peptide

&lt;400&gt; 69

Met Glu Glu Lys Ala Thr Tyr Val His Lys Lys Asn Asp Gly Thr Thr

1

5

10

15

Val Asp Leu Thr Gln

20

&lt;210&gt; 70

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3C Peptide



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49

&lt;400&gt; 70

Lys Asn Asp Gly Thr Thr Val Asp Leu Thr Val Asp Gln Ala Trp Arg

1

5

10

15

Gly Lys Gly Glu Gln

20

&lt;210&gt; 71

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3C Peptide

&lt;400&gt; 71

Arg Gly Lys Gly Glu Gly Leu Pro Gly Met Cys Gly Gly Ala Leu Val

1

5

10

15

Ser Ser Asn Gln

20

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50

&lt;210&gt; 72

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3C Peptide

&lt;400&gt; 72

Val Ala Lys Leu Val Thr Gln Glu Met Phe Gln Asn Ile Asp Lys Lys

1

5

10

15

Ile Glu Ser Gln

20

&lt;210&gt; 73

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

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## P3D Peptide

&lt;400&gt; 73

Arg Ile Met Lys Val Glu Phe Thr Gln Cys Ser Met Asn Val Val Ser

1

5

10

15

Lys Thr Leu Phe Gln

20

&lt;210&gt; 74

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

## P3D Peptide

&lt;400&gt; 74

Phe Thr Gln Cys Ser Met Asn Val Val Ser Lys Thr Leu Phe Arg Lys

1

5

10

15

Ser Pro Ile Tyr Gln

20

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52

&lt;210&gt; 75

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 75

Met Leu Ser Lys Tyr Ser Leu Pro Ile Val Glu Glu Pro Glu Asp Tyr

1

5

10

15

Lys Glu Ala Ser Gln

20

&lt;210&gt; 76

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

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53

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 76

Leu Asp Glu Asn Gly Leu Leu Leu Gly Val His Pro Arg Leu Ala Gln

1

5

10

15

Arg Ile Leu Phe Gln

20

&lt;210&gt; 77

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 77

Cys Pro Lys Asp Glu Leu Arg Pro Leu Glu Lys Val Leu Glu Ser Lys

1

5

10

15

Thr Arg Ala Ile Gln

WO 01/05824

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54

20

&lt;210&gt; 78

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 78

Ser Lys Thr Arg Ala Ile Asp Ala Cys Pro Leu Asp Tyr Ser Ile Leu

1

5

10

15

Cys Arg Met Tyr Gln

20

&lt;210&gt; 79

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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55

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 79

Arg Met Tyr Trp Gly Pro Ala Ile Ser Tyr Phe His Leu Asn Pro Gly

1

5

10

15

Phe His Thr Gly Gln

20

&lt;210&gt; 80

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 80

Lys Thr Met Ile Arg Phe Gly Asp Val Gly Leu Asp Leu Asp Phe Ser

1

5

10

15

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56

Ala Phe Asp Ala Gln

20

&lt;210&gt; 81

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 81

Asp Leu Asp Phe Ser Ala Phe Asp Ala Ser Leu Ser Pro Phe Met Ile

1

5

10

15

Arg Glu Ala Gly Gln

20

&lt;210&gt; 82

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence



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&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 82

Ile Asn Asn Val Asn Leu Tyr Tyr Val Phe Ser Lys Ile Phe Gly Lys

1 5 10 15

Ser Pro Val Phe Gln

20

&lt;210&gt; 83

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 83

Gly Gln Lys Ile Val Asp Glu Phe Lys Lys Leu Gly Met Thr Ala Thr

1 5 10 15

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58

Ser Ala Asp Lys Gln

20

&lt;210&gt; 84

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 84

Leu Gly Met Thr Ala Thr Ser Ala Asp Lys Asn Val Pro Gln Leu Lys

1

5

10

15

Pro Val Ser Glu Gln

20

&lt;210&gt; 85

&lt;211&gt; 21

&lt;212&gt; PRT

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59

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 85

Pro Gln Leu Lys Pro Val Ser Glu Leu Thr Phe Leu Lys Arg Ser Phe

1

5

10

15

Asn Leu Val Glu Gln

20

&lt;210&gt; 86

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 86

Ser Glu Lys Thr Ile Trp Ser Leu Ile Ala Trp Gln Arg Ser Asn Ala

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60

1

5

10

15

Glu Phe Glu Gln

20

&lt;210&gt; 87

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 87

Ser Leu Ile Ala Trp Gln Arg Ser Asn Ala Glu Phe Glu Gln Asn Leu

1

5

10

15

Glu Asn Ala Gln

20

&lt;210&gt; 88

&lt;211&gt; 21

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61

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic HAV

P3D Peptide

&lt;400&gt; 88

Trp Gln Arg Ser Asn Ala Glu Phe Glu Gln Asn Leu Glu Asn Ala Gln

1

5

10

15

Trp Phe Ala Phe Gln

20

&lt;210&gt; 89

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic

Peptide

&lt;400&gt; 89

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62

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala

1

5

10

15

Ala Ala Ala Ala

20

&lt;210&gt; 90

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic

Peptide

&lt;400&gt; 90

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala

1

5

10

15

Ala Ala Ala Ala Gln

20

&lt;210&gt; 91

WO 01/05824

PCT/US00/19267

63

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:Synthetic  
Peptide

&lt;400&gt; 91

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly

1

5

10

15

Gly Gly Gly Gly

20

&lt;210&gt; 92

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:Synthetic  
Peptide

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64

&lt;400&gt; 92

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly

1

5

10

15

Gly Gly Gly Gly Gln

20

&lt;210&gt; 93

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic

Peptide

&lt;400&gt; 93

Gly Gly Gly Gly Gly Ala Ala Ala Ala Ala Gly Gly Gly Gly Gly Ala

1

5

10

15

Ala Ala Ala Ala

20



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65

&lt;210&gt; 94

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence:Synthetic

Peptide

&lt;400&gt; 94

Gly Gly Gly Gly Gly Ala Ala Ala Ala Ala Gly Gly Gly Gly Ala

1

5

10

15

Ala Ala Ala Ala Gln

20

1